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SCHOOL AND SOCIETY

EDITED BY J. McKEEN CATTELL

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EDUCATIONAL REVIEW

EDITED BY WILLIAM McANDREW

Volume 35 SATURDAY, JUNE 18, 1932 Number 912

THE CONTRIBUTION OF STATISTICAL METHOD TO EDUCATION

By Dr. HARL R. DOUGLASS

PROFESSOR OF EDUCATIONAL ADMINISTRATION, COLLEGE OF EDUCATION, UNIVERSITY OF MINNESOTA

AN author of a volume on testing in education published several years ago opened his treatise with the following apt quotation from Plato: "If a man can not measure and another who can not measure say to him that he is four cubits high, how can he but believe him?"

If a man can not measure, and another who can not or will not say to him that the project method, or the Dalton plan, or the mastery plan, is the only royal road to learning, and say it to him in flawless, forceful rhetoric, beautifully written or interestingly spoken, how can he but believe? If he is told that the study of geometry has intrinsically peculiar values for improving the power of reasoning, that adolescence marks the beginning of reason, that the study of foreign languages and of mathematics make outstanding contributions to scholastic success in college, that homogeneous grouping develops inferiority or superiority complexes, that the two-year junior college is superior to the four-year type, or that any one of a thousand other things may or may not be true, and if these statements are made in the proper language, with an appropriate stage setting of authority and personality, and with the weaknesses in logic carefully glossed over, he is helpless. If he refuses to be convinced, he is thought to be negativistic, unprogressive or lacking in ability to understand. But if he can measure and reduce his problem to precise quantitative terms, he may then avoid the dilemma.

The organization and administration of schools, the materials and methods of instruction and the supervision and improvement of teaching have traditionally been the legitimate playground for those who enjoy freedom of speculative inquiry and who avoid the rigors and restrictions of quantitative, exact and tedious experimental methods of investigation. If I were to review the meanderings of educational thinking in the past, stopping here and there with outstanding leaders and their methods of inquiry, I am certain that you would recognize the fairness of an assertion that educational thinking has been unfortunately and severely hampered by the lack of objective and quantitative terms and methods. Plato, in his "Republic," outlines and advocates a fantastic curriculum, a type of homogeneous grouping, the nucleus of a methodology, all based upon a psychology that he was forced largely to invent.

Later Quintilian in Rome, Vittorina de

Feltre at Mantua, Sturm at Strassburg, and a succession of early modern authorities left us in documentary form their observations about education, its objectives, materials and methods. Among the latter group may be mentioned Comenius, Rousseau, Pestalozzi, Locke, Herbart, Froebel and Spencer. One should not regard lightly the stimulus which these men gave to educational thinking. That the wheels of educational progress were kept turning, albeit with much lost motion, up until the present century has been largely due to their contributions. With keen intellects and the intuition of genius they have furnished a leadership which has been most useful.

Yet, they have labored under serious handicaps and limitations. The body of facts about learners and learning and about the relative efficacy of various methods and means of organization, administration, supervision and teaching has been a pitifully inadequate nucleus, heavily diluted with assumptions and premises which were apparent, but not true or accurate. However gifted the earlier thinkers may have been in intellectual endowment and training, they were not privileged to start with a large body of known facts as premises or raw material for the exercise of their talents nor to employ refined techniques and instruments which have since been made available.

The nature of their problems magnified and intensified their difficulties. The human mind is not a simple subject or object of study. The problems are too difficult, the datum of the study of learning too intangible and complicated to respond to crude and subjective study even by genius. It is not odd that the development of the sciences of rocks, stars, heat, mechanics, chemicals, plants and flesh have flowered earlier and to a greater extent than has that of psychology and education.

The study of education is further complicated by the lack of uniformity among its items of data. Children do not present uniform capacities for learning, standard interests in the materials of learning, or equally keen desires for knowledge. They do not all respond to educational situations in the same manner. At times it seems that no two respond in like manner, but behave as certain chemicals in a demonstration exercise sometimes used in the teaching of chemistry. In this exercise each of the test-tubes in a rack is partly filled with a different substance. From a beaker a fluid is poured, some into each of the test-tubes. In no two test-tubes are the resulting precipitates of the same color; but in one, brown; in another, black; in another, yellow, and so on; the nature of the precipitate being as much determined by the contents of the test-tubes as by that of the beaker.

One can not hope, therefore, to develop a scientific basis of learning upon data gathered concerning one or a small number of individuals. The study of education is a study of numbers of individuals. It is a study of groups rather than a study of individuals.

It is necessary to describe groups as groups. As numbers increase, it becomes impossible for one to hold in mind the data concerning each of the individuals composing the group. A practical means of summary becomes essential to clear thinking. While, in a general way, groups may be described in such non-numerical terms as bright or tall or having progressed satisfactorily, such expressions are hardly adequate for precise description. To begin with they are not objective, but in all likelihood depend upon the reporter for meaning as well as accuracy. They are also crude. They lack the fineness necessary to careful research. Comparisons may be made only with disappointing reservations. They are awkward and cumbersome. Just as in algebra it is very economical to rep-

resent some more or less complex idea as the number of kilowatts of electricity per hour by a symbol such as x or y, and, as it is sometimes quite desirable in order to simplify algebraic manipulation to designate an expression such as $\frac{ab-cd}{2ab}$ by a single letter, c or k or t, so in the description of groups it is necessary to devise simple and exact terms and concepts which free our mental energies for other tasks. When we calculate the arithmetical mean of a group we have a measure of the magnitude of the group and a measure of its central tendency expressed in exact terms, free from human bias or idiosyncrasies.

In describing a group, we need, also, to note and to express precisely the variability of the individuals. To say that they vary widely, or that some are much larger than others, is a rough generalization reasonably suitable for some conversational purposes but definitely inadequate and relatively crude when compared to a precise statement, such as the difference between the upper and lower quartile is 6 or that the standard deviation is 8, or even that the range is 13. Several other and less commonly used means of describing groups may be employed to add definiteness to description and to thinking. Among these are percentiles, coefficients of variation, average deviations and graphical methods. Of the latter the frequency polygon, the histograph and the percentile graph more particularly have been of valuable service.

Ordinarily, we are not so much concerned with the particular group, except as it furnishes the basis for conclusions which may be safely made concerning much larger groups, *e.g.*, all children in general or all of a given range in age or grade. Usually the value of a research study lies in the fact that it enables us to arrive at some generalization which is at least to some degree applicable to groups much larger than those employed in the investigation.

When, either in statistical studies or in non-statistical thinking, our inferences derived from small groups are applied to relatively unlimited groups, we are subject to the possibilities of several types of errors in reasoning. Among these are errors of measurement and of sampling. For example, among the first 10 names drawn at random from a file of 1,000 school pupils, the names of 7 boys may be drawn. To infer that 700 of the 1,000 pupils are boys is attended by some risk, although there may be no particular reason to suspect that the 10 names drawn do not constitute a representative sample of the entire file any more than to suspect that one pint of a liquid is not a good sample of the hogshead of it. We may draw a similar sample of 10 names and discover that but 4 of these pupils are boys. The discrepancy is material. We attribute it to chance.

Limited samples composed of individual cases or units not entirely homogeneous are always subject to chance errors of that sort. We may be satisfied beyond all reasonable doubt that a tossed coin should fall heads exactly one half of the time. Yet we hardly demand, if we toss it seven times, that it stand on edge once in order that the expected proportion of heads to tails may obtain. In fact, we will not guarantee that, if we pitch it an even number of times, a 50–50 performance will result—though we can be sure that as the number of tosses increases, the proportions will approach 50 per cent. heads and 50 per cent. tails.

Through the contributions of Gauss, Emcke, Quetelet, Galton, Pearson, Sheppard, Yule, Spearman, Filon, Kelley and others, statistical techniques are now available which enable us to estimate the probability that the mean, the standard deviation, the coefficient of correlation or

any measure of a limited sample lies within any specified deviation from the corresponding measure for an unlimited number of cases. If one knows the mean and the standard deviation of a reasonably normal distribution of a known number of cases, one may accurately and quickly calculate the probable or standard error of the mean. By means of a table prepared by thoughtful and competent individuals, one may also estimate the probability, barring the operation of other than chance errors, that the mean of the cases actually studied lies within any given distance from the mean of the unlimited group, or that it lies beyond a certain distance from the "true" mean, and consequently the probability that the true mean is greater or less by a given amount than the obtained mean. For example, if the mean weight of a representative group of 170 ninth-grade boys with I.Q's of over 135 is 260 kilograms and the standard deviation is 26 kilograms, one may within a minute or two be reasonably sure that there is approximately one chance in a thousand that the mean weight of an unlimited group, of which the group studied is a random sample, is greater than 266 or less than 254 kilograms.

Practical problems of education in a large proportion of instances involve comparisons of two or more groups. Of great importance among these are the studies to determine which of two or more methods or of two or more units of materials of instruction will result in the greatest contributions to certain objectives of education. The use of the method of controlled experiment has been, in a number of other sciences, perhaps the most useful of all methods of research. The discovery of the causes of malaria, typhoid, cholera and other infectious diseases, and consequently our present degree of control of these plagues, has been effected by the method of controlled experiment—the method of the single variable. The concept of the spontaneous origin of life in the decay of organic matter was forever destroyed by the simple procedure of holding constant all variable save that of permitting insects to deposit their eggs in the decayed matter under observation. The greatest contributions of Pasteur to bacteriology were arrived at by this procedure. In his study which enabled him to conclude that bacteria, not dust or other causes, produced mold, he not only employed the method to satisfy himself, but when his critics claimed that the microorganisms left in the filter by liquids exposed to dust were the products of the filter which was itself an organic substance, he confounded them by the simple expedient of employing instead a filter of mineral asbestos.

We have been slow to turn to the controlled experiment in the study of problems of education. De Feltre in the fifteenth century and Ratke in the sixteenth attempted to test their theories of education by putting them into practice in the classroom. Basedow in the eighteenth century put certain phases of the theories of Comenius and Rousseau to actual test in his Philanthropinium at Dessau. Pestalozzi, a few decades later, put his educational theories into practice at schools at Stanz, Burgdorf and Yverdon. Herbart a half century later established a practice and experimental school in connection with his pedagogical seminary at Königsberg. In the latter half of the nineteenth century, the training school at the Oswego Normal School, the experimental school of Francis W. Parker at the Cook County Normal School at Chicago, and still more notably the laboratory school established by John Dewey at the University of Chicago in 1896 are examples of attempts to test educational theories. That the investigations conducted at these schools contributed little of permanent scientific value to education may be directly attributed to

the lack of adequate means of measurement and the lack of statistical methods to refine and objectify the interpretation of results of their experiments.

Statistical method enables us not only to describe groups in exact numerical terms and to compare two or more groups in such terms but also guides us in determining what confidence we should place in the differences or similarities noted between groups. We may know the probability that, as far as chance errors are concerned, the differences obtained between limited groups deviate by given amounts from the true difference. By "true difference" I refer to the difference that exists between unlimited groups of which the limited groups are random samples. If, for example, we discover that 1,000 twelve-year-old girls weigh more than 1,000 twelve-year-old boys, and that the difference in their mean weight is 6.8 kilograms, we are not able to say that this is the exact difference between the mean weight of all boys and girls of whom our groups are true samples, but we may know what are the chances in one hundred or one thousand that the obtained difference lies within one, or four, or any given number of kilograms of the true difference. There are available similar formulae which assist us in arriving at some logical conclusion as to the confidence which we may attach to differences obtained in controlled experiments.

These formulae will not, however, as is sometimes supposed, enable us to make any allowance for a difference between the experimental situation and situations to which we may wish to apply the general principles arrived at from the experiment. With different subject-matter or even in schools in which conditions are different in matters associated with the experimental variables, the principles may apply only approximately and possibly not at all.

One of the great problems of the study of education is to ascertain what things occur concomitantly and the degree to which they do so. Such knowledge is prerequisite to prediction. We need to know what things to do with teaching success, not only that we may predict the success of individual teachers but that, as far as possible, we may prepare successful teachers. We desire to know what goes with success in learning in thousands of types of situations.

If we attempt to keep in mind the data needed in the study of such problems, we find we are not equal to the task. If, for a relatively large number of individual cases, we attempt to hold in mind the concomitant variation in two or more variables, let us say, Latin marks and intelligence quotient, we quickly become confused. When we arrive at conclusions, we have no exact means of expressing the degree of relationship. If several of us examine the records of a hundred or so high-school pupils in an effort to ascertain the degree of correlation between Latin marks and intelligence quotients, it is unlikely that we will agree as to the closeness of relation. Should we do so, we will still be unable to express our conclusion as to the degree of correlation in precise or objective terms except as we resort to some standard device.

In the linear equation, $y = ax + b$, the relationship between y and x is fixed. Any change in x produces a definite and known change in y. The correlation is 100 per cent. The concomitance of change is invariable. But it is apparent that the relationships we wish to study in education are not so simple. Success in teaching may tend to go with training, and school marks to go with intelligence scores, but not invariably and not in any fixed proportion in each case. Correlation is known to exist between many pairs of functions or events of practical interest in education but in few is the correlation perfect. We

have need, therefore, of a measure to enable us to evaluate, to conceive of, and to express varying degrees of relationship far more precisely than one may do in non-quantitative terms and statistical method has served that need.

Pearson, Yule, Spearman, Thorndike, and others have made successive important contributions to the further development of the theory and techniques of correlation. Not only may we express degrees of "going together-ness" in exact and quantitative terms ranging from .00 to 1.00, that is, from no correlation to complete relationship as may be expressed in our algebraic equation, but we may now evaluate the significance of any given numerical statement of the degree of correlation for the purposes of estimating one variable from another. For example, we may estimate the usefulness of a correlation as great as that indicated by a coefficient of .50 for classifying pupils in homogeneous groups. By adoption of reasonable assumptions we may know what are the probabilities that each child is being placed in the proper group or that he is placed one group or two groups removed from that in which he belongs. By means of the correlation coefficient we may develop a "regression equation" which will enable us to estimate, let us say for example, college mark from high-school mark, or any variable from one or more others, if there is known to be close correlation between the two variables. If no errors other than chance errors of sampling and measurement have affected our calculations, we are able by means of simple formulae to know the probability that our estimates are within a given deviation from truly accurate estimates.

It is quite uniformly recognized that unless the means of measuring the variables involved in a correlation problem are quite reliable, the resulting coefficients are almost certain to be too small. It is easy to think of situations in which one is not so much interested in the correlation that exists between such things as scores, or marks, which are known to be of imperfect reliability, as in the correlation that would obtain, were the scores derived from completely reliable tests. We may, for example, wish to know to what extent the ability to read is conditioned by size of vocabulary. Unfortunately, one is not permitted to have absolutely reliable measures of ability to read or of size of vocabulary. We do have available, however, a method of correcting for lack of reliability a coefficient of correlation based upon such measures of these variables as we may have to work with, or as it is more frequently called "correcting for attenuation." The use of this device yields a valuable approximation of what the correlation between perfectly reliable scores would be.

In many instances the nature of the problem or of the available data precludes the legitimate use of the conventional product-moment formula for measuring correlation. In the case of the study of the relationship between salary and experience, one degree or type of correlation is usually found to exist through a limited range of experience and other degrees or types of relationship through other sections of the range. The dependence of salary upon experience may not be that represented by a straight line but by a broken line or a curve. Statistical method has developed a technique for that type of situation in the form of the correlation ratio and correlation "eta."

In many instances the available data in one variable may be expressed in but two categories though the variable may actually be one which if expressed in sufficiently fine categories would give evidence of being distributed after the fashion of the normal frequency. An example of this type of situation is the problem of calculating the

degree of correlation between intelligence test scores and the occurrence or non-occurrence of graduation from high school. The latter variable which by nature may be expressed in a number of graduated categories such as having finished the 8th grade, or the 10th grade, or a year in college, in some situations may be found to be known as of only one or the other of two categories, namely, the failure to complete a given grade in school. Statistical method, through the technique of "bi-serial r," has enabled us to measure, describe, and express relationships from data in this form which would otherwise be quite difficult to interpret.

It often happens also that data with respect to both variables are expressed only in two categories, for example, having graduated from high school and having one or both parents who attended high school. Here, if both variables may be assumed to be in reality normal in distribution, but expressed only in two categories in the data available, we may utilize that means of measuring and expressing the correlation which has come to be called "tetrachoric r."

In some situations the two variables may not be expressed in quantitative terms. Such would be the case if our variables were the answer "yes" or "no" to two such questions as "male or female———" and "Do you belong to the National Education Association?" or if the variables were "having attended a normal school," and "both parents having been native born."

In other investigations though the body of data may be classified in any one of several categories it may not even be properly thought of at all as being of relative magnitude as in the case of the "occupation of father" and "vocational decision" of son. Researchers in the field of mathematics and statistical method have furnished relatively simple tools for measuring relationship in these types of situations, though I fear that not all research workers in education realize that these aids are available or appreciate their relative simplicity. The avenues of study opened by these instruments and aids to clear thinking are numerous.

Problems without number exist in education, in which it is desired to get at causal relations or to determine the influence of one variable upon another without the interference or cooperation of other variables. There seems to be positive correlation between economic or social status on the one hand and success and persistence in school on the other. Success or persistence in school may be thought of only with difficulty as wielding much influence on economic or social status. Economic status may reasonably be thought of as influencing success in school, perhaps indirectly, but nevertheless definitely.

It is, however, quite possible that both variables are influenced concomitantly by one or more variables other than the two under consideration, in this case by intelligence. The development of the techniques of partial correlations has enabled us to think much more clearly and to approach more closely reliable answers to such questions than we are able to do either by non-numerical reasoning or by the use of zero-order (simple two-variable) coefficients of correlation. Of course one must not place too much confidence in the fact alone that two things are correlated as a basis for concluding that one is the cause of the other. The fact that in certain states the percentage of illiteracy is unusually high and the percentage of students studying Latin is also large may hardly be assumed to constitute proof that either is the cause of the other.[1] The fact of correlation itself

[1] See Quintus H. Flaccus II, "Latin and the Statistical Method," SCHOOL AND SOCIETY, Vol. XXI, p. 51 (January 10, 1925), for a clever "reductio ad absurdum."

is ordinarily not enough to establish the nature of the causal relations. Supplementary facts or principles must be called in to assist in ascertaining what is the cause and what is the effect.

The improvement in clear thinking that may be effected by use of the technique of partial correlations is well illustrated in the study of the relation of certain variables to college marks made by Professor Mark May at Syracuse University. When Professor May calculated the coefficient of correlation between college marks and hours spent in study he was astonished to discover that it was but .32. However, when intelligence was held constant, the correlation between time spent in study and college marks was found to be .71! The explanation lay in the negative correlation between intelligence and hours spent in study. Bright students studied less and yet made higher marks. Less able students studied more and made lower marks.

The contribution of partial correlation to clear thinking may also be seen in a study which I completed recently. The coefficient of correlation between the amount of foreign language taken in high school and average college marks was found to be approximately .20. When intelligence was held constant, the resulting coefficient of partial correlation was only slightly greater than zero.

It is obvious that one should be able to predict more accurately from two or more correlated variables than from one alone. We should be able to improve the forecast of performance, let us say, of school marks, persistence in school, teaching success, or juvenile delinquency, by combining two or more variables in the optimum manner. We may predict school marks from intelligence test scores and from previous marks in school with greater accuracy than with either intelligence test scores or previous school marks alone. In a study of the relation of certain factors to academic success in college, to which I previously referred, I obtained a coefficient of correlation of .45 between the American Council of Education psychological test scores and the average mark in the first two years of college and a coefficient of .56 between average college mark. When high-school mark and psychological test score were combined with the optimum weighting, a coefficient of .63 between the two and average college mark was found.

We may know the proper weighting which should be attached to each of the prognostic variables, and our predictions will be made more accurately than if the various predictive variables are equally weighted. Multiple correlation techniques not only make it possible for us to know by what combination of variables we may predict most accurately and what the inclusion of each additional variable adds to reduce the error of forecast, but to know the probability of the accuracy of the predictions made, and furthermore to determine what weights should be attached to each variable if we are to make our estimates with least possible error.

I have time merely to mention certain other types of contributions which statistical method has made to education. The present stage of development of standard tests was made possible by the development of statistical method. Psychological tests remained on a relatively low level of usefulness for practical school purposes until statistical method developed and opened up possibilities previously undreamed of. The controlled experiment is basically a statistical problem.

All safe and effective programs of guidance have their very roots in statistical methods. Nothing could be further from the truth than the statement made occasionally by individuals, who little realize that such a statement marks its author as disgracefully innocent of any adequate understanding of what he is saying, that

statistical method is serving to divert attention away from the individual and in the direction of numbers. As a matter of fact, it is only through the statistical study of groups that one is enabled to render effective service to the individual. Educational guidance, vocational guidance, homogeneous grouping, classification of pupils, carried on without a basis in sound premises built up from careful study involving sufficient cases to insure reliability and validity of the premises, is, in practical analysis, a pretense which borders upon quackery.

It seems to me that within the last quarter century we have been crossing the threshold in education which separates the domain of rough, crude, subjective methods from that of careful and reliable methods of educational research. We have been accumulating an assortment of valuable instruments for research in education which promise to do for education, at least in some degree, what the microscope did for natural science, the telescope for astronomy, and the development of the calculus and advanced mathematics did for physics and astronomy. Until these instruments were made available for natural science, the development of knowledge in this field was necessarily restricted and retarded. Adequate and precise observations could not be made. The area which could be charted on the basis of objective data was limited and the necessity of resorting to speculation was soon reached. Descriptions of the stars and other heavenly bodies were limited only by the fertility of imagination. Superstitions about the causes and means of prevention and cure of disease could not be separated from scientific facts. We had no way of knowing the facts. David Starr Jordan used to say that there never was a time when the people knew the answer to so many scientific questions as in the 13th century, but unfortunately, so few of them were correct.

I have no patience for those leaders in education who speak disparagingly of the usefulness of statistical methods either in research or in the practical field work in education. I can not understand their position nor fathom their motives. Perhaps I should go no further than to say that teachers, administrators, and other students of education should be very hesitant to commit themselves to a leadership which threatens to return the study of education to speculation and to prostitute educational practice to a succession of passing fads, the values of which have not been subjected to any objective investigation. At best I can bring myself to believe that these individuals are not careful to distinguish between the proportion of misapplications of and abuses of statistical methods which may be expected to be permanent and the proportion which may be regarded as merely a symptom of temporary professional indigestion in the pioneer years in which statistical methods are slowly becoming a part of professional equipment.

I have no fear that the use of statistical method will not continue to contribute to the development of a body of scientific facts, principles, and methods for education. I am afraid, however, that much harm will result from the misleading and inaccurate criticisms of statistical methods by those who are prone to rationalize, who love to comfort the unhappy, or who nourish a strong craving for being in the daily news. Too often, I fear, that most of those who read or hear these criticisms are not sufficiently well grounded in statistical methods to evaluate their merits and that they rely somewhat too heavily upon the competence and the disinterestedness of their informers.

Under any circumstances, statistical methods should not be thought of as being other than exact logic dealing with data which have been expressed in exact and precise terms and expressed for the sake

of clarity by means of symbols. Statistical treatment of basic data can do but little to improve its validity, but careful statistical treatment will conserve what validity and reliability the data may possess. Any but careful statistical treatment will operate only further to multiply the sources and increase the magnitude of errors. Quantitative data unworthy of statistical treatment may not by any manner of logic be thought of as suitable for any sort of interpretation. Reasoning by statistical method is essentially subject only to those errors also characteristic of non-statistical thinking and is free from a host of possible errors which may result from the inability of the human mind to comprehend and keep constant during prolonged thinking, complex data and situations expressed in non-numerical and subjective terms.

EDUCATIONAL EVENTS

BROADCASTING ABROAD

A REPORT has been issued by the National Advisory Committee on Radio in Education entitled "Broadcasting Abroad" which gives information with respect to the average amount of time devoted to educational programs of fifteen European countries as follows:

Music and musical entertainments, 44.3 per cent.; literature, 5.4 per cent.; talks, 10.5 per cent.; criticism and news, 12.7 per cent.; religious transmissions, 3.65 per cent.; miscellaneous, 25.1 per cent.

The report states that in Europe, as elsewhere, the possibility of broadcasting as a medium of information for the listening masses was realized in the first days, and "talks" were given a place alongside musical transmissions. To-day however the courses of talks are arranged, not as a subsidiary activity of a program director, but by educational authorities or under the advice of a council of experts.

In an ever-growing group of countries educational broadcasting is being extended into the school hours of the afternoon, and the highest authorities in the land are talking to students on subjects intimately related to their school curriculum. This of course entails close collaboration with the educational authorities. In Great Britain this collaboration has been assured by the creation of consultative committees, consisting of representatives of all the interested departments of educational activity.

In the case of adult education emphasis is being laid upon the importance of giving the listener a more positive part than has been the case hitherto. The practice is growing of forming listening "groups" who meet in public libraries or educational institutes, and, under the direction of a trained leader, follow up the educational broadcasts with debates, etc. In other countries the listeners are encouraged to visit the museums, art galleries, etc., and examine personally the exhibits in the light of the information that has been broadcast.

INTERNATIONAL SUMMER SCHOOLS

ACCORDING to a correspondent of the London *Times*, it is hoped to put in force this summer an arrangement for effecting exchanges of students between England and Germany under competent guardianship and management.

It is proposed that young people of both sexes shall participate in the plan. They will, however, be separately grouped. The arrangements at present tentatively agreed with the German authorities are as follows: English students will spend two or four weeks during the period July 24 to August 20 in either a hostel in Berlin or with selected families in Hamburg. Each morning will be devoted to general study, music or physical education in the company of German students and under the supervision of expert German teachers. The afternoon will be left free for recreation, and the day will conclude with debates, dramatic performances, etc., always shared with the young German hosts. The total cost for a fortnight will be about £7 and for a month £12. The numbers of English students for whom arrangements can be made are: In Berlin, 20 boys and 20 girls; in Hamburg, 20 boys. With each party of 20 there will be two English masters or mistresses.

German students from Berlin and Hamburg will visit England during the same period that

the English students are in Germany, English students being detailed to act as their hosts or companions. It is hoped that those English students who perform this service this year will be able to go to Germany next year, if the success of the scheme warrants its continuance. Similar educational and recreational arrangements will be made for the German students in England. Accommodation will be provided at Whitelands College, Putney, and at Ramhurst Manor, near Tonbridge. At Whitelands there will be 20 Berlin girls and 20 Hamburg girls with German and English mistresses and 40 English girls acting as hostesses. At Ramhurst Manor 20 German boys from Berlin will be accommodated with 20 English boys to act as their companions, the whole party being supervised by German and English masters. For English students who wish to act as companions to the German students in England the cost for the month is estimated at about £7.

DECLINE IN THE SALE OF TEXT-BOOKS

FACTS brought out in an interview of a representative of the *U. S. Daily* with Dr. William J. Cooper, U. S. Commissioner of Education, and Mr. E. M. Foster, chief of the Division of Statistics of the Office of Education, are reported as follows:

The net sales of text-books sold by 42 leading publishers dropped from $22,977,001 during the six months' period between July and December, 1930, to $19,487,457 for the corresponding period in 1931. If sales from January to July, 1932, which have not been tabulated, show the same drop, the total decrease for the year will probably amount to $7,000,000.

Dr. Cooper said that "school systems are storing up future trouble for themselves by refusing to replace dilapidated books when they should be replaced."

"At present," he continued, "text-books and similar supplies amount to but 3 per cent. of the average school budget. Administrators who think they can introduce a saving by not purchasing as needs arise, but instead try to get along with ragged, torn and sloppy books, will ultimately face a serious replacement bill involving very large expenditures."

In commenting on the significance of the decline in sales, Mr. Foster said:

"An adequate and up-to-date set of text-books should be a part of the equipment of every school, whether the books are owned by the school board or by the pupils. Books are part of the tools with which the students learn. To let this equipment depreciate either in quality, condition or amount is to postpone a cost to a future time which is justly chargeable to the current year. Every effort should be made," Mr. Foster added, "to maintain a high standard of text-book equipment."

The following additional information was supplied by Mr. Foster.

Every month between July and December showed a decline in text-book sales. There was a 12.8 per cent. drop in July, an 18.5 per cent. drop in August, and approximately a 10 per cent. drop in September. The decrease in October was 14 per cent., in November 25 per cent., and December approximately 22 per cent.

Sales in July declined from $3,415,784 in 1930 to $2,977,460 in 1931; in August from $6,195,131 to $5,046,360; in September from $6,920,877 to $6,230,138; in October from $3,345,053 to $2,871,608; in November from $1,736,907 to $1,297,720, and in December from $1,363,249 to $1,064,189.

College text-book sales remained practically what they were in 1930.

Twenty-four publishers reported both the number of books sold and the net value of the sales. The decrease for the six months in 1931 over the same period in 1930 was approximately 13 per cent. both for number of books and value for this group of companies.

These firms sold during the period in 1931 a total of 14,254,857 text-books compared with 16,455,498 in 1930. The value of net sales for these companies declined from $10,866,360 to $9,452,127 during the period.

THE MUSEUMS OF THE UNITED STATES

MUSEUMS, for years large city luxuries, are rapidly becoming the educational need of every community in the United States, according to Laurence V. Coleman, director of the American Association of Museums, reporting to the Office of Education for the Biennial Survey of Education in the United States.

There are now 1,400 museums in the United States, most of which are regarded as impor-

tant and necessary sources of education. Every two weeks, during the period 1928 to 1930, on an average, a new museum was founded in the United States. Growing public interest in archeology and history, scientific progress and geographical discovery during the last several years has resulted in decided museum development.

The trend in modern times is distinctly away from museums embracing more than one field. There is much discussion of decentralization, and subjects are replacing objects as museum exhibits. Museums of to-day are not only found in houses or buildings, but also in trails through woods and fields, "paths of learning." Some city museums have been moved to search local parks for natural features that can be explained on the spot, and the same influence on history is evident in the new Colonial National Park Monument and the George Washington Birthplace National Monument.

Park historians are being employed to teach history education in a classroom built by nature. During the past decade 13 trail-side museums have been established, including the Wayside Museum at Coolidge, New Mexico, and those in the Glacier National Park and Yellowstone National Park systems.

America's museums range from merest beginnings in rooms to large establishments with buildings and extensive educational and technical activities. Some have exhibits and nothing more. Others are almost disembodied services using temporary displays. Historical houses, themselves exhibits, are the homes of many passive museums.

The majority of museums recently established are devoted to art, science and history. The study shows, however, that there has been a total neglect of art in state and national appropriations for recently established museums. State support is largely directed toward museums which deal with science, and national support is largely given to out-of-door museums. Small town museums favor history; large cities give art the first place. The total capital outlay for public museum buildings during the last ten years in the United States is estimated at $103,181,000.

Thousands of school classes now visit museums, and workable methods of meeting the needs of pupils are being developed. A revolution in museum practice is the exhibition of subjects rather than objects. In 1929 the new Buffalo Museum of Science opened with chapters of natural history, expounded in the following succession: Physics, astronomy, geology, biology, botany, invertebrate zoology, vertebrate zoology, evolution, heredity, geography and concepts of each science.

Another forward step of public interest was that of the Pennsylvania Museum of Art in deciding that art exhibits should be divided into two parts, one for the public with exhibits giving a survey of the arts, and the other for the student consisting of a systematic file of objects for reference.

Forty of fifty recently established museums have been in communities with fewer than 100,000 population. New small community museums have been established in Dearborn, Michigan, New London, Connecticut, Montgomery, Alabama, Phoenix, Arizona, Doylestown, Pennsylvania, Hagerstown, Maryland, Covington, Kentucky, White Plains, New York, Anniston, Alabama, Wheeling, West Virginia, and Dalton, Massachusetts. Most decided museum development in recent years has been in the states of Maine, New York, Pennsylvania, New Jersey, Ohio, Indiana, Illinois, Wisconsin, Michigan, and the Pacific Coast States.

COMPULSORY LEAVE OF ABSENCE FOR DISABLED TEACHERS

A BY-LAW amendment empowering the New York City Board of Superintendents to compel city teachers who become disabled to take leave of absence without pay for a year or less was adopted by the Board of Education at a recent meeting.

The reason for the new policy was explained in the following report to the school board:

> The additional form of leave of absence without application will provide for certain cases where a teacher is temporarily incapacitated to make application for leave or where teacher unreasonably delays making such application.
>
> This provision will, in certain cases, obviate the necessity of suspension and charges where it may seem reasonable to allow a teacher an extension of absence without pay to give opportunity to recover from a mental or physical condition. Since the teacher has the option of terminating the

leave upon resumption of service, this provision does not deprive the teacher of the right to render service.

The by-law, as amended, has been submitted to Assistant Corporation Counsel Mayer and has been approved by him.

Under the by-laws as they stood prior to the amendment, teachers had the right to apply for leave of absence without pay for study, restoration of health or other satisfactory reason, but the school heads had no authority to grant leave unless applied for.

The amendment retains a teacher's right to apply for leave. Following is the text of the new section:

> The Board of Superintendents may grant leaves of absence without pay and without application to members of the teaching and supervising staff whose absence may be necessitated by physical or mental disability, and such leaves shall be terminable at a definite date within one year or terminable at the option of the absentee at an earlier date upon resumption of service.

It was pointed out that disabled teachers who exercise their right to terminate a leave granted without their application will still be subject to suspension and charges if the school heads feel that they are not sufficiently well to continue in service.

INSTITUTE FOR ADVANCED LINGUISTS AT THE COLLEGE OF THE CITY OF NEW YORK

A LANGUAGE institute, at which both advanced students and beginners may study under distinguished scholars, is to be held at the College of the City of New York this summer.

The opening of the institute will mark the crystalization of aims which Dr. Frederick B. Robinson, president of the college, has entertained for many years—to make the College of the City of New York the center for language study in America.

"New York is a city best adapted for such studies," Dr. Robinson said in announcing the program of the institute. "Here we can most easily bring together in the summer the ablest American and European scholars. New York offers special attractions for advanced students and for high school and college teachers, since almost every living language and dialect can be studied here. Many have their newspapers or other periodicals published here, and one can follow the news of the day in Arabic or modern Greek.

"The college library is at the disposal of members of the institute and may be supplemented from other great libraries of the city; the faculty of the college will also be glad to cooperate with the institute."

The language institute will continue the work of the linguistic institute of the Linguistic Society of America. The latter was established in 1928, for the purpose of enabling distinguished scholars to lead a six weeks' conference to stimulate students to research and lay before them the latest discoveries in the field of language. It was held at Yale University for two summers and at the College of the City of New York during 1930 and 1931. When it became known that the society would not be able to continue the work this summer, Dr. Robinson decided to carry it on under the auspices of the college.

The institute will be in session from June 30 to August 11; classes will meet five days a week; two college credits will be given for the work.

Dr. Charles Upson Clark, director of the institute, was on the faculty of Yale University for fifteen years and then became director of the School of Classical Studies at the American Academy in Rome, where he served from 1916 to 1919.

RESIGNATION OF THE DEAN OF LONG ISLAND UNIVERSITY

DEAN GEORGE R. HARDIE, of Long Island University, tendered his resignation on June 11 to the Board of Trustees. They announced they had accepted it and had also granted his request for immediate leave of absence until his resignation became effective on August 31.

Tristram W. Metcalfe was appointed temporary head of the university. He also will serve as acting comptroller and assistant secretary of the board of trustees.

Mr. Metcalfe has been associated with the university for several years in the department of education. He formerly was a member of the Yonkers Board of Education and has edited educational columns in various newspapers for many years.

The resignation of Dean Hardie followed formal charges by members of the faculty sent to the Department of Education at Albany. The faculty members asked his removal on the ground that he had mismanaged the affairs of the institution. The student body supported the faculty.

Long Island University was founded five years ago, when Mr. Jonas, acting chairman of the board, contributed $500,000 as the initial endowment. Dean Hardie had been head of the institution since it was founded. Although some 1,400 students attended the university during the scholastic year which ended on June 13, of whom all except thirty are reported to have paid $300 tuition each, the faculty members have received no pay for two months. More than $50,000 is due them.

The professors and instructors expressed confidence that the financial difficulties would be adjusted under a competent administration. "We are confident that money matters and everything else will be cleared up to the satisfaction of all," said Professor Theodore W. Gibson, who occupies the chair of mathematics. It has been conceded, however, that it may take several years to balance the budget.

Dean Hardie's letter of resignation to Mr. Jonas read:

> Numerous difficulties confront the trustees of Long Island University in connection with various problems which require an immediate solution. I can not now, after five years of strenuous and diligent effort devoted to the furtherance of the interests of Long Island University, be unmindful of my obligations to its board of trustees.
>
> My conception of my duty to the university and to the trustees leads me to the conclusion that it is for the best interests of all for me to tender my resignation as dean of the College of Arts and Sciences at Long Island University, to be effective August 31, 1932, which is the end of the present fiscal year. I do so tender my resignation.
>
> In order to further relieve you and the trustees from any embarrassment in carrying out any plans that you may have for the future, I further request a leave of absence from now until August 31, to be effective immediately.

The statement also said the trustees had received every assurance from the faculty and from the students of their full cooperation in the development of the institution.

THE NATIONAL SURVEY OF SECONDARY EDUCATION

ONE hundred and fifty leaders in education attended a dinner given on June 9 at the Cosmos Club, Washington, D. C., by the National Education Association to mark the completion of the National Survey of Secondary Education directed during the last three years by the Federal Office of Education. Members of Congress, representatives of twenty or more educational institutions and organizations, staff members, officials, and friends of the Federal Office of Education and the National Education Association were in attendance at the dinner. Dr. J. B. Edmonson, of the University of Michigan, a member of the survey consultant committee, served as toastmaster.

Dr. Leonard V. Koos, of the University of Chicago, associate director in active charge of the nation-wide study of high-school problems and progress summarized high points of the survey "findings" based on returns from more than 200,000 inquiry forms answered by principals, teachers, pupils, parents and employers, and on visits by survey staff members to approximately 550 different high schools in practically every state.

Dr. Koos reported enrolment increases from 4 per cent. of high-school age boys and girls in 1890 to more than 50 per cent. to-day—a secondary school enrolment never before equalled in this or any other country. "Increasing proportions of children from what are termed the lower economic levels are being given opportunities of education at the secondary level."

Curriculum changes "have been away from foreign language and mathematics (college entrance subjects) and toward social subjects and physical education." "Non-academic subjects, including fine arts and practical arts have shown decided increase. In many schools non-academic subjects are now said to claim from a third to two fifths of all the pupil's time.

"Unit assignments are serviceable in providing for individual difference," said Dr. Koos, adding, however, that many practices in use under different classifications were found to deviate widely from their originally described

characteristics and many were found to be essentially identical in practice.

Other findings of significance are: Increase in trade schools, fewer technical and commercial high schools, development of continuation, evening and summer schools; greater use of correspondence courses; greater flexibility in requirements for admission to college and universities, increasing opportunity for Negro secondary education in the Southern States.

"How essential it is for those responsible for the schools in one state to have made known to them the nature and direction of progress in the schools of other states," Dr. Koos said. "This is the service of the National Survey of Secondary Education. By examining its reports those at work in any community or state in schools at the secondary level will be able to note the progress and trends at that level in all states and sections and will in consequence be able to give more comprehensive and systematic consideration to the next steps to be taken in improving their own practices."

Other speakers were: U. S. Representative Burton L. French, of Idaho; Dr. William John Cooper, U. S. Commissioner of Education and director of the survey; Miss Florence M. Hale, president of the National Education Association, and J. W. Crabtree, secretary of the National Education Association. Guests from Congress, in addition to Representative Burton, were Mrs. Edith Nourse Rogers, representative of Massachusetts; Representative L. Russell Ellzey, of Mississippi; Representative Paul J. Kvale, of Minnesota, and Representative J. W. Summers, of Washington.

Dr. Koos announced that the various projects of the survey would be reported in 28 monographs which are now being prepared for the printer.

W. D. B.

EDUCATIONAL NOTES AND NEWS

DR. ELMER ELLSWORTH BROWN, chancellor of New York University, has notified the council of the university that he intends to resign as administrative head as soon as a successor shall be secured. His retirement closes twenty-one years of administration as the seventh chancellor of the university. Dr. Brown was United States Commissioner of Education from 1906 to 1911, and previously professor of education in the Universities of Michigan and California.

DR. PARKE R. KOLBE, president of the Polytechnic Institute of Brooklyn, has been elected president of Drexel Institute, Philadelphia, to succeed the late Dr. Kenneth G. Matheson. Before going to Brooklyn in 1925, Dr. Kolbe served twelve years as president of the University of Akron.

THE REVEREND A. H. POETKER, S.J., acting president of the University of Detroit since February, has been appointed president for a six-year term.

CHARLES H. WESLEY, professor of history at Howard University, Washington, D. C., has been elected president of Wilberforce University. He succeeds Gilbert H. Jones, who has been president for eight years.

DR. WILLIAM A. BOYLAN will be installed as the first president of Brooklyn College at the institution's first commencement on June 21. Though Dr. Boylan has acted as president of the college since May, 1930, the formal installation was postponed to coincide with the institution's first commencement, two years after the establishment by the board of higher education of Brooklyn College as the third independent center of public higher education in New York City. Dr. Boylan will be inducted by Dr. Arthur M. Howe, chairman of the administrative committee for Brooklyn College of the board of higher education. Mark Eisner, chairman of the board of higher education, will preside.

AMONG the degrees conferred by Boston University were the doctorate of laws on Dr. Lemuel H. Murlin, president of the university from 1911 to 1925, and the doctorate of science on Dr. Karl T. Compton, president of the Massachusetts Institute of Technology.

COLBY COLLEGE conferred at its graduating exercises the L.H.D. on Florence M. Hale, of Augusta, Maine, state agent of rural education and president of the National Education Association, and the doctorate of laws on Dr.

John H. Finley, of the editorial department of *The New York Times.*

DR. CLARENCE COOK LITTLE, formerly president of the University of Maine, received the honorary degree of doctor of literature from the university at the recent graduation exercises.

THE doctorate of laws was conferred at the sixty-ninth annual commencement of Bates College on Dr. John Hope, president of Atlanta University, and the degree of L.H.D. on Dr. Robert L. Kelly, executive secretary of the Council of Church Boards of Education and of the Association of American Colleges.

COLGATE UNIVERSITY conferred the degree of LL.D. on Stanley King, president-elect of Amherst College, at its annual commencement exercises on June 13. Dr. King delivered the commencement address.

THE University of Pittsburgh and Duquesne University, Pittsburgh, on the same day, June 8, conferred on Dr. James N. Rule, Pennsylvania state superintendent of public instruction, honorary degrees of doctor of laws.

AT the recent sixtieth annual alumni reunion of Lehigh University a testimonial dinner was tendered to Dr. Charles Russ Richards on the occasion of the completion of his tenth year as president of the university. Eugene G. Grace, president of the trustees, presided.

DR. CYRUS ADLER, president of the Jewish Theological Seminary of America, received a testimonial of appreciation for his thirty years of service to the seminary at the commencement exercises of the institution on June 5. He was presented with a bound volume containing a letter of greeting with more than five hundred signatures.

A PORTRAIT of Dr. Frank W. Taussig, Henry Lee professor of economics at Harvard University, painted by William James, has been presented to the university by Professor Taussig's friends.

PROFESSOR GEORGE MCLEAN HARPER, Woodrow Wilson professor of literature at Princeton University since the establishment of the chair by Mr. Edward W. Bok in 1926, will retire this month after forty-three years as a member of the faculty.

DR. EDWIN POST, oldest member of the DePauw University faculty in point of service, head of the department of Latin for fifty-three years, has tendered his resignation.

ULYSSES GRANT WHEELER, who is now seventy years old, has retired from the superintendency of the schools of Newton, Massachusetts.

DR. BENJAMIN P. THOMAS, of the Johns Hopkins University and for several years associate professor of history at Birmingham-Southern College, has resigned to become president of the Abraham Lincoln Foundation, Springfield, Illinois. His successor at the college is Professor Joseph T. Ecker, formerly assistant professor of history at the College of William and Mary.

DR. JOHN GRIER HIBBEN, retiring president of Princeton University, and Dr. Dean Lewis, surgeon-in-chief at the Johns Hopkins Hospital and president-elect of the American Medical Association, have been elected members of the board of regents of Mercersburg Academy, Pennsylvania.

SAMUEL INSULL has resigned as trustee of Northwestern University and Dr. Charles Mayo, of Rochester, Minnesota, has been elected in his place.

PROFESSOR RAYMOND D. HAVENS, professor of English at the Johns Hopkins University, has been appointed chairman of the committee of the American Association of University Professors to investigate the removal of Dr. Orlie M. Clem, professor of secondary education at Teachers College, Syracuse University.

AN Associated Press dispatch reports that G. Fred Pearson, chairman of the Dalhousie University board of governors for five years, recently tendered his resignation because the board refused to act on his recommendation for an investigation of the administration of President Carleton W. Stanley. President Stanley went to Halifax from McGill University, where he had been assistant to the principal. He was installed as president of Dalhousie, October 9, 1931, succeeding Dr. A. Stanley Mackenzie.

DR. THOMAS WALLING, director of education at Newcastle, England, has been appointed director of education at Sheffield, subject to the approval of the city council.

DR. CLARENCE A. BARBOUR, president of Brown University, arrived in San Francisco on June 8 from the Far East. He has been engaged in making a survey for the Laymen's Foreign Mission Enquiry and the Institute of Social and Religious Research in New York.

THE commencement address at Pennsylvania State College on June 6 was delivered by Dr. John H. MacCracken, associate director of the American Council on Education, Washington, D. C., on "Purpose and Plan."

DR. WILLIAM ALLAN NEILSON, president of Smith College, was the speaker at the commencement exercises of Springfield College, formerly the International Young Men's Christian Association College of Trinity Methodist Episcopal Church.

DR. FREDERICK B. ROBINSON, president of the College of the City of New York, delivered the address to the graduates of the Newark College of Engineering on June 10.

DR. JAMES L. MCCONAUGHY, president of Wesleyan University, gave the commencement address at Upsala College, East Orange, New Jersey, and at the Horace Mann School for Boys of Teachers College, Columbia University.

PROFESSOR FRANK VOGEL, professor emeritus of modern languages at the Massachusetts Institute of Technology, died on June 9. He was sixty-nine years old. Dr. Vogel had served on the faculty for forty-four years.

THE death is announced of Miss Lucy Hale Tapley, president emeritus of Spelman College, Atlanta, Georgia, a member of the faculty for thirty-seven years.

DR. WILLIAM JOHN COOPER, U. S. Commissioner of Education, has been appointed by the State Department to represent the United States at the Fourteenth International Congress of Secondary Education which will be held in London from July 18 to 23. The agenda for the congress includes the following subjects: (1) Out-of-school activities and their place in secondary school organization. (2) The professional training of the secondary teacher. (Preliminary discussion preparatory to the 1933 Congress.) (3) Report on improvements which have taken place during the school year 1931–32 in secondary-school buildings and equipment from the points of view of teaching, esthetics and hygiene. (4) The relations between the International Federation of Associations of Secondary Teachers and other international associations. Commissioner Cooper will also attend the Sixth World's Conference of the New Education Fellowship at Nice, France, from July 29 to August 12. W. W. Vaughn, president of the organizing committee of the congress, extends through Commissioner Cooper an invitation to teachers of secondary schools in the United States to participate in the sessions.

THE First International Congress on the Teaching of History will take place under the presidency of Professor Altamira, of the University of Madrid, who is one of the judges at the International Court of Justice at The Hague, from June 30 to July 2, at The Hague. The main topics for discussion will be: (1) the history of civilization adapted to primary and secondary schools; (2) national history and universal history, and the relation of history to geography; (3) school manuals primary and secondary; (4) removals from manuals of sentiments and expressions that imply international prejudice and misunderstanding; (5) artistic, literary and school-journey aids in the instruction of juniors. This conference is the outcome of a special study of history teaching for world unity initiated by the International Congress of Moral Education at its meeting in Geneva in 1922. At this meeting Professor Francesco Orestano, of Rome, proposed that the best historical authorities should be invited to pursue this enterprise collectively, and in 1930, at the fifth international congress at the Sorbonne, Paris, the plan was put forward of a conference entirely devoted to this theme.

THE sixteenth session of the International Labor Conference has adopted a new draft convention on the protection of children which, in conjunction with the conventions of 1919, 1920 and 1921, will prohibit the employment of children under fourteen years of age in any undertaking whatever.

A SPECIAL citizens' committee of fifty-three members has been appointed at Baltimore to welcome delegates to the tenth annual conven-

tion of the American Hellenic Educational Progressive Association, which meets from August 28 to September 4. Governor Ritchie and Mayor Jackson will be honorary chairmen, and Friend L. Wells has been designated as chairman. More than 5,000 visitors are expected to attend the convention.

EDUCATIONAL officials of institutions of learning throughout the nation are invited to gather at the University of Wisconsin for five days this summer to tackle problems of school administration and teaching. The university will be host to the officials at the first Institute for Superintendents and Principals to be held from July 18 to 22, inclusive. Sponsored by the School of Education, the institute is planned for city and county superintendents, supervising principals, elementary and secondary school principals, supervisors, directors of research, directors of guidance, and all others interested in administering public schools. The programs will consist of a series of round-table discussions, led by nearly 20 educational authorities. Among those from the university who will lead in the discussions are Professors J. G. Fowlkes, T. L. Torgerson, A. S. Barr, M. H. Willing, Max C. Otto, C. J. Anderson, H. H. Ryan, Calla A. Guyles, Curtis Merriman and C. E. Young, Frank O. Holt, director of the bureau of guidance, Professor A. H. Edgerton, Dean Harry Glicksman and John L. Bergstresser, assistant director of the bureau of guidance and records, are also on the program. Professors A. S. Barr, F. L. Clapp and J. G. Fowlkes, chairman of the institute committee, are in charge of the arrangements.

TEACHERS are invited to inquire concerning the Commonwealth College Summer Session and Camp to be held on the school site in the Ozark woods at Mena, Arkansas. Commonwealth College is a school training young people interested in the labor movement, but in the summer welcomes workers, students and professional people as visitors. Most visitors follow the college tradition and work cooperatively 15 hours a week at community tasks on the 320-acre "farm-campus." Such working guests pay $25 a month for room, board, laundry service and educational features. Others pay $50. Discussion circles will be held on the labor movement, world news and present-day problems. There will be swimming, hiking, dancing, tennis and a labor theater. Length of stay is optional. The director is Lucien Koch, formerly instructor at the Experimental College of the University of Wisconsin.

JULIAN MITCHELL announced on June 8 that a loan of $3,400,000 has been obtained from the Reconstruction Corporation through the South Carolina State Bank, of which he is president, to enable the State of South Carolina to pay its school teachers.

WASHINGTON COLLEGE, Chestertown, Maryland, celebrated the one hundred and fiftieth anniversary of its founding as well as the two hundredth anniversary of George Washington's birth on June 4. An elaborate pageant commemorated the connection of the first President with what is said to be the eleventh oldest institution of higher learning in the United States.

THE Lewis Memorial Liberal Arts Hall, Rosary College, River Forest, Illinois, was formally dedicated on Wednesday, June 1, by Chancellor George Cardinal Mundelein. The hall has been erected at a cost of four hundred fifty thousand dollars, of which one hundred fifty thousand dollars was given by Mr. and Mrs. William Harold Lewis, Chicago, in memory of their mothers.

THE newest unit in the Muskegon public schools system, the Angell Elementary School, was formally dedicated on April 6. The new building is named in honor of Dr. James B. Angell, president of the University of Michigan from 1871 to 1909. Webster H. Pearce, state superintendent of public instruction, was the principal speaker on the program. Dr. John VanderLaan officially presented the building as president of the Muskegon Board of Education.

FRANK A. VANDERLIP, former president of the National City Bank, New York, on June 7 presented the Scarborough School with a deed to the school building and property. The gift was announced at the commencement exercises, when diplomas were awarded to twenty-five students. In his address Mr. Vanderlip said: "This gift is in recognition of the untiring efforts of Dr. F. Dean McClusky and his staff and in appreciation of their success in build-

ing the school so that not only is it self-sustaining, not only in this year of depression has it had its most successful year, but the school and its graduates have established a reputation for scholarship and scholastic achievement of the highest order."

A MODERN school in actual operation, attended by 550 school children, will be one of the exhibits at the World's Fair in Chicago next year. The six-grade elementary school will overlook Lake Michigan and will contain every modern type of equipment. It is being constructed by the Chicago Board of Education. The building will be of two stories without basement, and of steel and masonry construction. It will include modern facilities, such as library, handicraft room, auditorium, gymnasium, kindergarten play room, kindergarten project room, bathroom, lunch room, administration suite for principal and clerk and equipment for doctor, dentist, visiting teacher and psychologist. The classrooms will be, to some extent, flexible in size, based on teaching situations; large rooms, 62 feet by 22 feet for audience lessons; regular classrooms, 32 feet by 22 feet, for recitations; pupil work rooms, 22 feet by 11 feet, for small groups, and pupil work rooms, 16 feet by 11 feet, for individual study. This layout has been built around a definite plan of instruction which is in operation experimentally in Chicago.

A GROUP of students said to be Communists seized the National University, Santiago, Chile, on June 10 and printed on the university printing press manifestos demanding the right to participate in Chile's new Socialist government. It is stated that the students were headed by Elias Lafferte, president of the Chilean branch of the Moscow Communist party. They demanded the government furnish them with suitable headquarters, suggesting either the Municipal Theater or the aristocratic club De la Union. The revolutionary junta ignored these demands and generally treated the students with amused toleration, but there were indications that stern measures would follow unless they got out of the university.

A WIRELESS message to *The New York Times*, dated from Havana, reports that the University of Havana, which was closed by a Presidential decree on July 1, 1931, because of anti-administration activities of the students, was restored to the normal status on June 10 by another decree of President Machado which puts all professors in a position to claim back salaries. The decree follows a Supreme Court decision of April 26 declaring the closing of the university to have been unconstitutional. Plans are being made, it was reported, to open the university in September, but some doubt is expressed as to the attitude that may be assumed by the students, who are among President Machado's bitterest enemies. It is estimated that some 150 students are prisoners at the Isle of Pines Penitentiary on charges of terroristic and anti-administration activities. So far only six or eight have been brought to trial.

DISCUSSION

THE OLDEST EXTANT MATHEMATICS

PROFESSOR O. NEUGEBAUER, Göttingen, Germany, recently published an article describing parts of an ancient Babylonian text in which quadratic equations are solved by a method exhibiting a knowledge of a modern formula for the solution of such equations.[1] It is especially interesting to note that the two possible roots seem to have been considered when both of them are positive, while in all the extant partial solutions by the ancient Greeks only one such root is noted, although some mathematical historians believe that the Greek mathematicians knew that certain quadratic equations actually have two distinct positive roots. Professor O. Neugebauer regards this text as the oldest of the known mathematical texts, with the exception of such as are very fragmentary or relate only to tables.

He directs attention to the fact that contrary to the commonly accepted view this mathematics of the ancient Babylonians does not exhibit any dependence on astronomical or commercial questions but is pure mathematics in the modern sense of this term and seems to have been culti-

[1] Quellen und Studien zur Geschichte der Mathematik, Astronomy und Physik, Studien, vol. 2 (1932), p. 15.

vated for its own sake. He admits, however, that it is still an unsettled question whether the greater part of the ancient Babylonian mathematics is of this type and that new excavations may at any time throw additional light on this question. He is convinced that the ancient Babylonian mathematics is on a much higher level than that of the ancient Egyptians, which is also contrary to the view expressed by various other writers, including Professor W. W. Struve, who recently translated the Moscow Mathematical Papyrus. In both cases an active early period seems to have been followed by a period of decadence extending through more than a thousand years.

What is perhaps of greatest interest in connection with the article under consideration is the announcement of a plan to publish a considerable amount of additional material relating to ancient algebra. It is well known that the ancient Greeks emphasized geometric methods and that Euclid's Elements begin with geometry. On the contrary, the ancient Babylonian mathematical literature seems to be especially rich along algebraic lines and the history of algebra has already been profoundly affected by translations of ancient Babylonian texts published during the last four or five years. It is important to note that the oldest extant mathematical text under consideration is at least on as high a level as any of the later ones which have become known and hence it is questionable whether the period of greatest Babylonian mathematical activity has yet been reached.

This Babylonian mathematical text, as well as the others which are known, is not dated, but its language seems to imply that it was written during the first Babylonian dynasty and to be from one to two hundred years older than any of these others. In the golden period of Greek mathematics such a period of time is important because it exhibits decided advances, but on account of the stationary character of the ancient Babylonian mathematics the exact dates of the various texts are less important. The greatest weakness of this mathematics from the modern point of view is the lack of proofs and explicit postulates. The existence of general methods has to be inferred from the solution of special problems. Whether these methods were actually understood by them in the modern sense of this term is still doubtful, but the facts that they used such methods and seem to have been interested in pure mathematics are important not only for the student of the history of mathematics but also for students of ancient civilizations.

G. A. MILLER

"SNAP" COURSES IN EDUCATION

THERE has been considerable argument in teacher-training institutions over the relative difficulty or easiness of courses taken in the different departments. Faculty members in the old established divisions like mathematics, science, history and language very frequently express themselves as feeling that students do not find the work at all hard in fields outside the academic departments, and that in the education subjects, especially, any one can "get by" with superior grades.

The departments of education in colleges where teachers are being trained have come up for special criticism from other departments, most probably because the education fields are rather new in origin, and like most new things they have been subject to much suspicion. Eventually they will be taken into the fold and given their proper position among the cluster of college offerings.

In an attempt to discover what divisions really seemed to offer the student the most scholastic difficulty, the authors of this paper make a brief study based upon the grades issued to 100 students selected at random from the registrar's books. Of these 100 students, 50 of them had taken what was called a one-year course and the other 50 had taken the two-year course.

A uniform procedure was followed in every case and the grades issued were translated into honor points, using the following equivalents: A equals 3 honor points per credit hour; B equals 2 honor points; C gives 1 honor point; and D gives one half.

It was decided to study the grades issued in three divisions: (1) Education, including the methods, introductory courses, psychology, observation, etc.; (2) academic, including mathematics, history, sociology, economics, languages, sciences, etc.; and (3) special subjects, including

music, art, manual training, physical education, etc.

Every case was studied straight through, that is, the number of honor points earned in education, in academic and in special subjects was counted out carefully for each of the 100 persons, so that in the end the comparison would be made between the grades issued in the three divisions on the same student, and one would not be comparing marks issued in education to one student with marks given in academic subjects to some other student.

Table I gives the summary of the tabulations made in terms of average honor points:

TABLE I

AVERAGE HONOR POINTS

Division	Av. H.P. per credit hour 1 yr. cases	Av. H.P. per credit hour 2 yr. cases	Av. H.P. per credit hour combined cases
Education ...	1.61	1.74	1.67
Academic ...	1.68	1.76	1.72
Special	1.72	2.02	1.88

A study of the above table indicates at a glance that students were able to earn the highest grades in the special subjects, next highest in the academic and lowest grades in education. Although the difference is not great between education and the academic fields, nevertheless, it would seem to indicate that the same students who were able to average a B—in science, history, mathematics, etc.—earned slightly less than that in their education courses.

It would seem that statistics such as these would tend to cause instructors in the respective fields to hold other departments in much higher esteem than might have been the case in several instances.

The table indicates also that students taking the two-year course profited by their second year of training and experience and earned substantially higher marks on the average. Many factors might account for this increased average on the part of two-year students, such as a better knowledge of how to study and make use of time, a better understanding of what various instructors require, further experience and equipment as a background, etc. However, in the case of education *versus* the other divisions again, it indicates that professors of the professional subjects continue to grade lower than the other departments.

The results of a study of this kind might not be altogether reliable because one can not take into account the elements of interest and native ability on the part of the student. Also the education subjects are almost always required, whereas the student elects his academic subjects for the most part. That condition might have a tendency to cause the student to have a better attitude toward his academic work than toward the professional. Yet in a teacher-training institution by his very presence the student has chosen teaching as a career and he should welcome any training in education that prepares him for his chosen task. Attitudes probably do not enter in to predetermine scholastic progress so much as one might think.

SOME CONCLUSIONS

(1) Education courses are not "snap" courses.

(2) In a study of 100 students they earned highest marks in special subjects, next highest in academic subjects and lowest in education.

(3) Students earned higher averages in all three divisions by taking the second year of work.

(4) The results of the study should cause faculty members to have more mutual respect for various departments.

W. W. LUDEMAN
J. R. MCANELLY
SOUTHERN STATE NORMAL SCHOOL,
SPRINGFIELD, S. D.

THE PUPIL LOOKS AT THE TEACHER

IN this age of educational evolution many articles are written setting forth the innumerable deficiencies of our pupils, but seldom does one appear suggesting that something might be wrong with the teacher. It is the purpose of this article to give the pupils a chance to answer some of the charges placed against them.

Many pupils claim the teachers do not make the lessons interesting enough to appeal to them, and they naturally do not try very hard. Following are quotations of pupil comments:

Biology is one of the deadest subjects that ever was originated.

I don't like to pick up the insides of insects and carve my initials on worms.

It's too complicated and has too many hard names.

I don't like the study of animals.

The words are too big and not definite enough.

The teacher does not explain fully the things she tells us.

Chemistry is hard.

Chemistry is a dry subject.

French doesn't agree with me. I think I was passed on my effort.

The teacher makes the subject too hard.

The problems are not understood by the class.

The teacher created no interest in the work, whatever.

I didn't pay any attention.

A few pupils accused teachers of wasting time, as follows:

The teacher was away from the class most of the time.

My teacher talks too much.

So much class time is taken up in marking graphs.

The teacher spent too much time with the other class.

The teacher was out of the room most of the time.

Many pupils charged teachers with unfairness, as is shown by the following:

Tests were based on library work and I can't go to the library.

The teacher based her tests on her lectures and not on the book.

Tests were given without notice.

The teacher played favorites.

The teacher allowed copying.

I was marked down for helping the boy next to me.

The teacher doesn't call on the poorer students enough.

Teacher marks unfairly, especially the girls.

My teacher is too one-sided.

I failed because I forgot to bring a note for being absent one day.

I raised my hand, but she wouldn't call on me.

The teacher changes her mind too much.

The teacher didn't give enough work to judge the marks by.

Our teacher requires us to remember too many details.

Teacher showed partiality.

The teacher marked unfairly.

Teacher depends too much on homework; class period is useless if homework is not done.

I missed some of the teacher's dictation.

I couldn't read the teacher's figures on the blackboard.

I received the same average as another pupil, who received a higher mark.

I erased once.

I couldn't stay after school and type.

Teacher gave us too much library work to do in the required time.

I went after school to make up my work, because she said she would only stay half an hour, but she kept me two hours and a half, so I decided not to make it up.

I failed on only one test and the teacher wouldn't let me make it up.

The teacher didn't give enough tests or oral work to grade us high.

Teacher is very unfair. I am not called on when my hand is raised, but am called on when I am not prepared.

The teacher marks so hard, but I love English in spite of her.

The teacher forces us to remember trivial details, causing us to forget the most important things in the lesson.

I had to slight home study for recitation in order to get all the outside reading done at the library.

I do not know how to study a language; have not the hook of it.

Several pupils accused the teachers of disliking them, some giving no reasons, and others the following:

I made the teacher mad, and she flunked me.

My teacher does not like sororities.

My teacher doesn't like the way I act.

The teacher likes pets, and I don't like to be a teacher's pet, as it is very unfair to other pupils.

Teacher doesn't like the way I play ball.

The teacher doesn't like me; she is influenced by her prejudices.

My teacher doesn't like me or anyone sitting around me, and does all he can to be hateful to us.

A few pupils accused teachers of being too strict, as follows:

Every time we move the teacher takes down our names.

Because there was not perfect quietness in the room we were marked down.

The teacher criticizes too much.

Teacher marks too hard.

You get marked down for the least little thing you do.

The teacher is too hard on pupils just beginning.

My accuracy was one point too low.

Teacher is the worst I ever came across, when she couldn't have me suspended, she had the truant officer sent to my house.

Sarcasm on the part of the teacher was charged in the following quotations:

The teacher is so sarcastic, I am fraid to say anything. She can make you feel like two cents with one word and one cent with two.

I had the worst teacher I ever had, always making sarcastic remarks, and always trying to put the blame on me for something I did not do.

The teacher makes a perfect fool of other pupils causing me to dislike her. You can't work well under a teacher you don't like.

The standards of some teachers were thought too high, according to the following quotations:

My teacher expects too much of me.

Our teacher doesn't give any excellent marks.

The tests were too hard.

Too much outside reading was required.

A few teachers lacked sympathy, according to the following quotations:

The teacher didn't understand me.

Some of my compositions were too funny for the teacher's sense of humor.

I'm too curious and can't help asking the girls around me about their dates and such.

The teacher said my girl friend sat too close to me.

Some teachers are so inconsiderate and aggravating, they just get your goat; no wonder children hate school.

Our teacher is new to the game and treats us like babies. She just tries to show off her authority.

It seems that the teacher did not understand me. She thought I was crazy and perhaps she was right.

I am too thrilled by who sits beside me and I get all flustrated.

Administrative weaknesses are blamed for some poor work of pupils in the following quotations:

I have had five different Math teachers in six semesters, and this time I failed.

I did not have enough algebra before I took this up.

The room was too hot.

I am in a class that is always noisy and I can't think very well.

I failed in Physics because I have had no Math.

The teacher uses scientific methods of medians and there are pupils in the class better than I am, so my mark is always low.

I have taken this same History three times, and am tired of studying the same thing over.

Did not have a text-book from which to study.

The clerk in charge of the Book Room didn't like my doing home work in Office Training period.

I am class secretary. I can't fix the roll and take part in the class.

I fooled around, but almost got an A.

I didn't work.

I loafed around too much.

My first teacher didn't know anything about typing or how to teach it.

My first teacher required accuracy but not speed, my second teacher required speed but not accuracy, and now I have my first teacher again.

I am in Z group and have no inspiration to study.

I always save my Spanish for the last thing every night, and by that time I am too sleepy to study it very much.

A few pupils blamed their poor work on teachers' peculiarities or distractions, which kept them from giving more attention to their studies. Following are the charges:

The teacher gave me such a pain with the way he talked.

The teacher makes so many funny faces when she talks, I forget all about shorthand and watch her face.

My teacher is so good looking I can't keep my eyes off him.

My teacher's actions distract my attention.

I had a fossil of a teacher, who had funny ways.

That beautiful face, I can always see it in my dreams spitting off French.

The teacher didn't know we were looking in our books on tests in the grammar books, so we didn't have to study; and in the reading books I didn't know the words and phrases.

I didn't get along with the teacher.

The teacher kept interrupting us in typing.

My teacher is so cute I can't concentrate on my work.

The teacher does not like me, largely I talk and laugh at something funny, and she does not see the joke.

This is a new teacher and her first class. She marks hard and everything must be done exactly her way.

Besides a few pupils who thought they had been treated fairly, the following are the only complimentary remarks found among over six hundred responses:

I have a very interesting teacher.

My teacher is one of the most interesting ones in school and really makes you like History.

For the first time in my life I really like History, though I hate to admit it.

C. C. GUILFORD

EASTERN HIGH SCHOOL,
WASHINGTON, D. C.

SPECIAL CORRESPONDENCE

AN APPLICATION OF THE PROJECT PROCEDURE TO SWIMMING

IF the project procedure is defined as an educational experience in problem solving, initiated by the student and carried out to the point of acceptable skill in its most natural setting, then swimming may be considered as an activity which may become an ideal project.

It is the purpose of this paper to show that swimming may be conceived and learned according to project principles involving the fundamental essentials of self-activity, reflective thinking, concrete achievement and favorable emotional set. The illustrations of an experiment in teaching swimming as a project are taken from actual practice in the swimming classes of the Women's Physical Education Department at the University of Washington.

Learning to swim is a skill in which people engage from the age of three to sixty-five or older, so it is not an elementary nor secondary school nor college subject. Because it is a natural and popular activity, a skill that all may learn and most people are anxious to learn because of the fun, the exercise, and the element of life preservation it has, it would seem to be more of a project type of subject than many others. Swimming is an activity that students at the University of Washington may elect, so that classes are composed of those who have elected to learn swimming, either for the first time or to improve the ability they have. So there is almost no question of arousing interest. The interest is there, particularly if the class is an elementary swimming class. Another element making swimming classes more or less ideal for project method is the size. They are small enough for the instructor to know each student rather quickly, which means knowing the starting ability, the fears and the ambitions of each. Each group is classified as to ability, so the students are working with individuals approximately in the same state of learning as they are. So the project method does perhaps more or less ideally fit this situation, and because of the necessity for thinking, planning and problem solving, it is perhaps, when possible, one of the best methods to be used in physical education. All too frequently, we are criticized for working with our feet more than our head in this field. That criticism used to be more justifiable than now. In the days of drill and passive exercise, of mere movement without thought, there was more muscle work than brain work. Now, when physical activity means a thinking activity, a combination of mental and physical work, the criticism is not warranted.

The part the instructor plays is always important in any teaching situation if marginal responses and concomitant learnings are going to be what we want them to be. The sooner student instructors learn that there is more to teaching than knowing the subject and giving it to the student, the better her chances are for becoming a real instructor. Students can not be treated as machines ready to be filled with oil so they will run. They are people looking for attitudes and opinions and principles and ideals to live by—and they must have opportuinties for expressing themselves. Self-expression possibly is one of the greatest self-developers making for growth in the individual. Expressing oneself, if the environment is desirable, means a shaping and hardening and rounding of the individual that in the end will help toward the best character development. Also then, because the project method of instruction means a purposing, a carrying out of an inner urge, a self-expressive act, it is valuable in swimming as in many other learning situations.

The instructor's part in teaching swimming by the project method is important. Her part is more the assisting, guiding and advising type of leadership. At first there will need to be some instruction, but not a great deal. In swimming, as in many other things, the technique the student learns by progressive self-experimentation is the technique that may prove most useful. Not that all learning should be trial and error. A minimum amount of that is desirable, but this amount is needed in order to make thinking more reflective and more worth while in other more complex techniques. Learning that raising the head or raising the arms out of water in a certain way while floating on the back will make one sink under water may be unpleasant when first tried in shallow water, but that knowledge will be of infinite help when swimming and floating in deep water. Students must know at all times what their own ability is in order that growth may take place as quickly as possible. It is most important, if learning is to be thorough, for students to be able to analyze their own skills. If in swimming the width of the pool on the side the head goes under water every other stroke, a problem arises. Why does it happen? Here is the opportunity for reflective thinking—for real thinking—recognizing a problem, defining it, searching for solution, trying a solution, noting the results. Working out the problem in this way, the student is engaged in thoughtful self-activity. Her foundation in the subject is more substantial. She will profit from the experience many times over.

All is not smooth sailing in this learning process—even if it is a hearty, purposeful act, and there are many sources from which to obtain the information desired. Often with students learning to swim for the first time there is a conflict. No matter what method is used this will always be a problem for the instructor to deal with. Many students are afraid of the water because they have been conditioned by fearing parents or recently have had unhappy experiences. So many times they are anxious to know how to handle themselves in deep water, but this urge is thwarted by their fear of what might happen. Students often forget their fears in their joy in finding that it is possible and even easy to acquire ability in swimming. However, they will many times work successfully and satisfyingly until a situation arises in which their fear blocks the way. A girl may know two strokes and be able to tread water—knowledge sufficient to enable her to handle herself well in deep water—and yet she is afraid to venture forth even though she has acquired her ability through whole-hearted, purposeful, thoughtful self-activity. The instructor then must guide and assist and encourage and understand, in order for the student to continue her purposeful activity.

After the first few meetings of the class, students begin to show individual differences, and from then on taking care of the class is practically a problem of guiding only. Step by step each student is working toward greater ability, working out her own problem with suggestions from the instructor and help and criticism and approval and disapproval at the right times. When students are purposing this way, following a strong inner urge, teaching is most interesting. Each student develops her ability as she wishes to with a few goals in the distance. There is voluntary extra work before class, after class, and days when the class doesn't meet. There is much observation of other swimmers better or worse than themselves. There is much fun and play and many friendly competitions. Sometimes the purpose is less strong, often because of discouragement—the particular technique is too difficult. Some practice with the instructor suggesting or with a student suggesting remedies the situation. Along with learning particular skills comes a need for acquiring certain attitudes about swimming when fatigued, about the effect of exercise, about assisting fatigued swimmers and about helping each other.

Some instructors may feel it is difficult to follow a course of study for swimming if the project principle is followed. It is never possible to allow students to follow their urges utterly, wherever they go. They do not know where they are going themselves, so that one or two goals set up as an end for twelve weeks of work are a help to them as well as the instructor, merely showing which path to follow, which purposes to follow. In learning to swim the goal is almost evident without being named—ability to handle oneself in deep water. In intermediate swimming one or two objectives enable the

student to know just where to direct her activity. If the class is too varied in ability for one goal to be set, grading on improvement in ability will be just as satisfactory and many times fairer in the end to the student.

Certain questions might be used to test the results of this method of teaching. For instance: Have the students learned to handle themselves better in the water? Have they passed well the few basic tests set up as goals for other classes of like ability? Have they acquired attitudes that may transfer in part to other situations in life? Has the activity produced a concrete, satisfying result? Will this new activity lead on to bigger activities? Have the right habits of thinking been developed? Do the students have the habit of reflective thinking when practicing swimming? Has there been a close alliance between the subject and the real interests and needs of the individual at all times? In other words, has the project method of teaching carried out the aims and objectives of a swimming course?

In this instance the method proved very satisfactory, and better results were achieved than in some of the more formally taught classes. As to ability achievement, for example, the students passed more difficult tests and learned a greater variety of skills than the students of other classes of the same starting ability.

It would seem, then, that the project method may have a definite place in the field of swimming instruction—it is a valuable, educative process encouraging mental as well as physical activity and resulting in increased growth and development.

HARRIET F. GLOVER
DEPARTMENT OF PHYSICAL EDUCATION,
UNIVERSITY OF WASHINGTON

QUOTATIONS

FRONTING THE BOSPORUS

APPOINTMENT of Dr. Paul Monroe as president of the two American colleges—Robert College and the Constantinople Woman's College—at Istanbul marks the beginning of a new chapter in the life of those two institutions. They stand but a little way apart looking across the Bosporus from Europe into Asia. The heroic labors of their pioneers, Cyrus Hamlin, George Washburn, Caleb Gates and Miss Mary Mills Patrick, established them where the old Greek trading post of Byzantium "reared its head" above all the cities of the East under the name of Constantinople. The old Roman road along which one has pictured the primitive shepherds with their flocks, the daring Greek peddlers and the clanking Roman legions passing has been multiplied into converging railroads and plane routes, but all lead into the capital under a new name which is the gateway to Asia Minor and also the southern water-gate to the Black Sea.

Dr. Monroe brings to this position an experience that is exceptional. It is doubtful if any one else has so wide and thorough-going an acquaintance with educational institutions and methods throughout the world. Detailed surveys have been made under his personal direction in the Philippine Islands, Puerto Rico and Iraq, and first-hand studies and observations in the Far East and the Near East. For years he has been director of the International Institute of Teachers College and has also been a teacher at Columbia University and Barnard. The West in giving him to the Near East is making what might well be called a Constantinian contribution in the field of education.

These institutions of which he becomes the single head are but two of the six American educational centers included in the Near East College Association group, the others being the American University at Beirut, the International College at Smyrna, the American College of Sofia and Athens College in Greece. There are a dozen more institutions of like origin. They are called "American" because they were originated in America, have been more or less under the direction and control of American boards of directors, with more or less American support. They have varying courses and disciplines, from Egypt to Persia. The purpose of all may be defined in the statement of the aims of one: to afford to the young people of the country in which it is located a thorough literary, scientific and practical education that will develop high character and fit them for duties of citizenship in their own country.

The two colleges in Istanbul have the most difficult problems, and it is therefore of first importance that a man of such high qualifications should be selected to go forward in cooperation with the young republic in these its formative years.—*The New York Times.*

CHANCELLOR BROWN'S RETIREMENT

BY character and accomplishment Dr. Elmer Ellsworth Brown has made a deep impression on this city in his twenty years as chancellor of New York University. There can be nothing but regret that "advancing years" impel him to announce his withdrawal from his important office as soon as the university shall have found a new chancellor. If Dr. Brown feels the weight of his seventy years he carries it to admiration. At the New York University commencement last week he was the same strong, wise, alert and gracious chancellor whom thousands of students have held and hold in personal affection.

It was under Dr. Brown's leadership that New York University became the great urban university that it is to-day. Preserving faithfully the democratic ideal of the founders, he built an immense structure on a firm foundation, always with the purpose that "the best knowledge should be applied to whatever mankind is engaged upon." He has exhibited constantly the twofold ability, essential to his task, of educator and administrator. He has worked upon a grand, yet not grandiose, scale, always the sound yet forward thinker, never the visionary.

His place will be hard to fill. A man who can run the complicated machinery of a vast university and keep the heart of it all beating strong and sure must be an educator of rare parts. Dr. Brown notably among college heads has been able "to see life steadily and see it whole." For the influence of his career at New York University this community has every reason to be grateful.—*New York Herald-Tribune.*

COORDINATION OF SCHOOL AND COLLEGE WORK

PLANS OF THE PROGRESSIVE EDUCATION ASSOCIATION

To a large number of colleges and universities throughout the country letters proposing "a fresh scrutiny of the procedure that affects the mutual relations between schools and colleges" have been sent by Wilford M. Aikin, chairman of the commission on the relation of school and college of the Progressive Education Association. The letters invite these higher institutions to share in a study begun about two years ago by the commission, which is being carried on through funds provided by the Carnegie Corporation of New York.

The outcome of the study is a plan by which a small number of schools, both public and private, will follow curricula and methods developed upon a new educational basis, with the understanding that colleges will accept selected students from these schools without regard to the course and unit requirements now generally in force and without further examination. The experimental period proposed is for five years, beginning with the autumn of 1936.

Preliminary work in introducing the purpose and scope of the enterprise was taken during recent months, February to April, in small, informal regional conferences attended by officers of representative colleges and universities. These were held as follows: At the University of Chicago, February 6; at Columbia University, February 27; at the University of Pennsylvania, March 5; at Radcliffe College, April 15; at Harvard University, April 16. "Groups will be called together in other centers if the need arises." The college representatives received the proposals, according to Chairman Aikin's letter, "in a friendly and sympathetic spirit, and almost all of them indicated that the plans will receive approval in whole or in large part when formally submitted to the colleges." Assurance is given that "every phase of the program, including the selection of the participating schools, will have the immediate and close supervision of a directing committee."

A full statement of the plan is given in the contribution by Chairman Aikin.

RAYMOND WALTERS

A PROPOSAL FOR BETTER COORDINATION OF SCHOOL AND COLLEGE WORK

STUDENTS of education in America know that the elementary school has changed fundamentally in organization, curriculum and procedure within the last decade, and that profound changes are taking place in our universities and colleges. But similar reconstruction in the secondary schools is difficult, if not impossible, under present conditions. Recognizing the need of improvement in secondary education, and realizing that any significant change involves the cooperation of the colleges, the Progressive Education Association appointed, almost two years ago, a commission on the relation of school and college. Last December, a generous grant of funds for the work was provided by the Carnegie Corporation of New York.

MEMBERS OF THE COMMISSION

Mr. Wilford M. Aikin, director, John Burroughs School, *chairman*.

Professor Walter Raymond Agard, University of Wisconsin.

Mr. Willard Beatty, superintendent of schools, Bronxville, N. Y.

Mr. Bruce Bliven, editor, *The New Republic*.

Dean C. S. Boucher, University of Chicago.

Mr. A. J. Burton, principal, East High School, Des Moines, Iowa.

Miss Flora J. Cooke, director, Francis Parker School.

Mr. Harold Ferguson, principal, Montclair High School.

Mr. Burton P. Fowler, director, Tower Hill School.

Dr. Josephine Gleason, Vassar College.

Dr. Thomas Hopkins, curriculum research specialist, Lincoln School.

Dr. Leonard V. Koos, University of Chicago.

Dr. W. S. Learned, The Carnegie Foundation.

President Robert D. Leigh, Bennington College.

Dr. John A. Lester, The Hill School.

Dean Max McConn, Lehigh University.

Mr. Clyde R. Miller, Teachers College, New York.

Dr. Jesse Newlon, director, The Lincoln School.

Dr. W. Carson Ryan, Swarthmore College.

Dr. Harold Rugg, Teachers College, Columbia University.

Miss Ann Shumaker, editor, *Progressive Education*.

Dr. Eugene R. Smith, director, Beaver Country Day School.

Mr. Perry Dunlap Smith, director, North Shore Country Day School.

Miss Katharine Taylor, director, Shady Hill School.

Dr. Vivian Thayer, Ethical Culture School.

Professor Goodwin Watson, Teachers College, Columbia University.

President Raymond Walters, University of Cincinnati.

Dr. Ben D. Wood, collegiate education research, Columbia University.

The commission desires to bring about such changes in the relation of school and college as will permit sound experimental study of secondary education. It is concerned with all students, but especially with those who plan to go to college, and it seeks to establish conditions under which schools may develop more fully in all students a strong sense of individual and social responsibility. The commission wishes, also, to make it possible for schools and colleges to help each student shape his course so that it will be best fitted to his needs, and so that his work will have meaning and significance for him.

PLAN FOR COOPERATION

The following plan is presented for approval:

A. A small number of schools, probably not more than twenty, will be chosen to carry on experiments in secondary education appropriate to the purpose of this plan. The number is limited so as not to be unwieldy for experimental purposes. There will be included public and private schools each with funds, faculty personnel and interest, parental support and administrative leadership adequate to the task. Only schools of highest character and excellence and established reputation will be admitted to this group. These schools will enter into an admissions arrangement (described below) with colleges for an experimental period of five years beginning with the autumn of 1936.

Note: As this arrangement permits the schools to change their curricula in the fall of 1933, candidates for admission to college in 1936 will have had three years' experience under the recon-

structed curriculum before leaving the preparatory school.

B. A directing committee has been appointed to supervise all aspects of the plan, including the practical coordination between schools and colleges and the securing of effective educational procedure. The membership of the committee, which represents the various types of colleges and schools sharing in the study, follows:

Mr. Willard Beatty, superintendent of schools, Bronxville, N. Y.
Professor Boyd H. Bode, Ohio State University.
Professor Carl C. Brigham, Princeton University.
Mr. Burton P. Fowler, director, Tower Hill School.
Mr. Will French, associate superintendent of schools, Tulsa, Okla.
Dean Herbert E. Hawkes, Columbia University.
Dean John B. Johnston, University of Minnesota.
Dr. John A. Lester, Hill School.
Dean Max McConn, Lehigh University.
Dr. Jesse Newlon, director, Lincoln School.
President Marian E. Park, Bryn Mawr College.
Dr. Eugene R. Smith, director, Beaver Country Day School.
Mr. Wilford M. Aikin, director, John Burroughs School.

As the work develops, the functions of this committee, in its relations to the schools and colleges involved, will become increasingly clear. At the present time it is plain that its responsibilities will include:

1. Selection of the schools to share in the experiment.
2. Examination of plans of work and proposed curricula submitted by the schools.
3. Approval, rejection or revision, in collaboration with the school, of plans submitted.
4. Working with each school in the systematic study and development of its work as it proceeds and obtaining full and adequate reports from time to time.
5. Determining the degree of uniformity necessary or desirable in the work of the schools sharing in the plan.
6. Bringing the schools and colleges into close cooperation in guiding each student's work. As soon as a pupil has indicated his choice of a college, it is hoped that representatives of the college will work with the school in studying and counselling the candidate, and that the school will work with the college after the student begins his college career.
7. Suggesting such modifications in college regulations and procedure for the students entering during the five year period under the new arrangement as will conserve the fundamental educational values of the experiment.
8. Systematic observation of these students during college and as many years thereafter as seems wise, with the idea of evaluating the work of the schools participating in this study.

SELECTION OF STUDENTS

Admission to college for the experimental period will be based upon the following criteria:

A. Recommendation from the principal of the cooperating secondary school to the effect that the graduating student (a) is possessed of the requisite general intelligence to carry on college work creditably; (b) has well-defined serious interests and purposes; (c) has demonstrated ability to work successfully in one or more fields of study in which the college offers instruction.

B. A carefully recorded history of the student's school life and of his activities and interests, including results of various types of examinations and other evidence of the quality and quantity of the candidate's work, also scores on scholastic aptitude, achievement and other diagnostic tests given by the schools during the secondary school course.

It is intended that the tests used will be of such character that the results submitted to the colleges will give a more adequate and complete picture of the candidate than is given by methods now in use. A special committee on records is now at work endeavoring to determine:

1. What information the college needs for wise selection and guidance of students.
2. How that information can best be secured.
3. In what form it should be recorded and presented in the colleges.

The cooperating colleges will not be obliged to admit under this agreement all such students as meet the new requirements. However, during the experimental period and from the limited group of cooperating schools, the colleges agree to accept students under this plan without regard to

the course and unit requirements now generally in force for all students, and without further examination. The colleges, for this period, agree also that students applying for admission under the new requirements will be considered without discrimination in comparison with students applying from other schools where present requirements are in effect.

UNDERLYING IDEAS

The educational emphasis in this plan is based upon a conviction that the secondary schools must become more effective in helping young people to develop the insight, the powers and the self-direction necessary for resourceful and constructive living. We wish to work toward a type of secondary education which will be flexible, responsive to changing needs and clearly based upon an understanding of young people as well as an understanding of the qualities needed in adult life.

We are trying to develop students who regard education as an enduring quest for meanings rather than credit accumulation; who desire to investigate, to follow the leadings of a subject, to explore new fields of thought; knowing how to budget time, to read well, to use sources of knowledge effective and who are experienced in fulfilling obligations which come with membership in the school or college community.

To this end we should like to provide, more fully than the present organization of secondary education permits, for changes such as are indicated under the following headings:

A. *Greater mastery in learning:*

Acquisition of such techniques as reading with speed and comprehension, observing accurately, organizing and summarizing information; ability to work with many kinds of materials; capacity to see facts in their relationships; ability to state ideas clearly; techniques essential as a foundation for later advanced study.

B. *More continuity of learning:*

The elimination, wherever advisable, of limited, brief assignments and courses; a more coherent development of fields of study; provision for more consecutive pursuit of a particular subject through several years; encouragement (including the devising of ways and means and the allowance of sufficient time in the school schedule) of the desire to investigate; development of the power and impetus to pursue a subject beyond the school requirement, and stimulation of the desire to put ideas to use.

There should be less emphasis on subjects and more on continuous, unified sequence of subject-matter, planned on a four-year or six-year basis. English is the only course that at present even approximates this aim. Continuous courses in the sciences and social sciences would take the place of such fragments of subject-matter as chemistry or modern European history. Chemistry has its biological, geological or astronomical implications that should not be overlooked if the whole of science is to have significance. Similarly, such cultures as those of South America and Asia should have a place in history courses, for comparative study, as well as those of Europe and the United States. Mathematics and foreign languages also would be reorganized in a manner to enable the pupil to get a "long" view of these fields of subject-matter.

C. *Release of creative energies:*

Through experience and training in various arts, including both practice and appreciation (example—painting, modeling, writing, drama, music); through the encouragement, in all work, of independent, individual thinking and of fresh combining of thought; through providing opportunities, with guidance, for young people to exercise their desire to do something "on their own" (example—tinkering, inventing, constructing, special pursuits in reading, instrumental music).

D. *Clearer understanding of the problems of our civilization, and the development of a sense of social responsibility:*

Through including, in the curriculum, studies bearing upon specific problems of American civilization and that of the modern world, and the outstanding individual and collective efforts to solve these problems; through using every opportunity to help students to realize the interdependence and inter-relationships of human lives; through helping students to develop social responsibility, in feeling and in practice as well as in appreciation of the issues involved, by means of such activities as participation in school community life with concern for the general welfare, discussion groups on social and economic problems, field trips to study industrial processes, housing conditions, or the machinery of government; a model league of nations, or assembly programs which require, as do all the foregoing activities, much reading and investigation in the broad fields of social relationships.

E. *Revision of curriculum materials and their organization:*

Besides the changes in curriculum materials to be inferred from the above-mentioned changes in practice, such other experiments as: reorganizing the sequence of material in different fields of knowledge, for secondary education (example—mathematics, science, history, languages); unifying the subjects of study and removing some of the boundaries now existing between closely related fields (example—history in its relation to the facts of economics, geography, literature and fine arts); addition of new materials from fields of knowledge not hitherto included in typical secondary school curricula (example—certain materials from the fields of economics, anthropology, geology).

F. *Guidance of students:*

The function of guidance in education needs much greater study and emphasis. While it is important that the student should have as much independence and responsibility as he can use wisely, counsel of the best sort should be available when he needs it. Some one should know him well and be able and ready to examine his problems with him and to help him solve them. He should be helped to see his career through school and college as a developing experience, with each phase in a definite relationship toward the whole.

Under the directing committee, plans will be worked out to achieve this purpose. The program will include: more thorough study of the needs of individuals, with corresponding adjustment of the school program to their needs; record-keeping for later analysis; more intelligent preparation of the student for the use of the opportunities provided by the colleges.

G. *Teaching:*

It is evident that the changes in secondary education suggested in this memorandum can not occur without teaching of a very high quality. This would be true of any experimental work. We fully recognize the scarcity of teachers who are qualified in background, in training and in personality for this type of work. There are, however, some teachers now at work who could successfully carry through the suggested program. Some of these are already studying its possibilities. Others will be discovered as the work is begun.

Schools, colleges and universities that are undertaking the training of teachers will be interested in helping select the most promising candidates and in training them in the best possible ways for this work. We fully realize that the discovery and training of better teachers must go hand in hand with wise experimentation, and that experiments must move slowly enough to keep within the limits of available good teaching.

WILFORD M. AIKIN

EDUCATIONAL RESEARCH AND STATISTICS

THE GERMAN PRIMARY SCHOOL CENSUS[1]

THE German school census is taken every five years and the preliminary figures for the 1931–1932 census school year, taken on May 15, 1931, have just been made public. Only public primary schools are included in these census figures, but it may be mentioned that such public primary schools constitute 99.4 per cent. of all the primary schools in Germany and number as pupils 91.6 per cent. of all the youth in the obligatory school age.

PUPILS

The number of pupils in German public primary schools amounted to 7,590,000 in the school year 1931–1932, as against 6,660,000 pupils in 1926–1927, which represents an increase of fourteen per cent. This increase may be compared to the decrease of 25 per cent. registered in the period between the school years 1921–1922 and 1926–1927; the latter decrease being accounted for mainly by the heavy decline in births during the world war.

With the dropping out of the youth born in the world war period, the number of pupils in German primary schools began to increase and this increase will probably continue until 1935 is reached, during which year the remaining pupils who were born during the war period will have left the schools. From that period on, the number of pupils will doubtless commence to decrease steadily because of the general decline in the German birth rate which began in 1923.

[1] Consular report from Vice Consul C. T. Zawadzki, Berlin, submitted through the Office of Education, Department of the Interior. Also see "Wirtschaft und Statistik," 1st volume of March, 1932.

The following table illustrates this clearly:

Year	Beginning pupils	Obligatory pupils	Finishing pupils
1925	669,000	7,643,000	1,272,000
1926	1,286,000	7,653,000	1,265,000
1927	1,253,000	7,632,000	1,263,000
1928	1,210,000	7,596,000	1,231,000
1929	1,117,000	7,545,000	1,153,000
1930	1,061,000	7,847,000	754,000
1931	1,116,000	8,283,000	667,000
1932	1,087,000	8,752,000	606,000
1933	1,036,000	9,114,000	661,000
1934	1,011,000	8,841,000	1,271,000
1935	1,021,000	8,611,000	1,238,000

The German population at present in the obligatory school age is not much greater than the number of pupils registered in the primary schools, since a part of this population is entered in other than public schools, in middle schools, and in the higher institutions of learning.

The following table shows the number of pupils in the primary schools in Germany during the last three census periods, and in the more important states of Germany.

	1921–1922	1926–1927	1931–1932
Prussia	5,470,000	4,176,000	4,681,000
Bavaria	1,045,000	761,000	937,000
Saxony	720,000	507,000	568,000
Wurttemberg	362,000	255,000	296,000
Baden	361,000	262,000	301,000
Thuringia	242,000	173,000	207,000
Germany	8,894,000	6,662,000	7,589,000

The number of pupils in Germany per 10,000 persons increased from 1,056 in the school year 1926–1927, to 1,174 in the school year 1931–1932.

TEACHERS

The number of main official teachers on the public primary schools of Germany in 1931–1932, which amounted to 187,704, increased very slightly (0.05 per cent.) as compared to five years ago. This negligible increase, at a time when the number of pupils increased steadily, is accounted for by the attempted reduction in the staff of teachers. From the school year 1921–1922 to the school year 1926–1927, the decrease in the number of teachers did not correspond to the decrease in the number of pupils, since the number of schools and school classes, which would form the basis of any such decrease, could not be diminished correspondingly.

The tendency to reduce the number of teachers may be noticed from the number of pupils per teacher. In 1926–1927 there were 35.7 pupils per teacher in Germany, while in 1931–1932 the number of pupils per teacher rose to 40.4. The following table shows the distribution of teachers in the various states of Germany:

State	1921–22	1926–27	1931–32	Pupils per teacher
Prussia	116,765	112,384	115,410	40.6
Bavaria	24,034	23,447	20,739	45.1
Saxony	16,673	15,752	15,622	36.4
Wurttemberg	7,636	7,214	7,618	38.9
Baden	7,581	6,782	6,818	44.2
Thuringia	5,369	4,817	4,796	43.1
Germany	195,946	186,853	187,704	40.4

Only the figures for all of Germany and the most important states are given in the above table, but the same trend may be noticed in the smaller states. The smallest number of pupils per teacher in 1931–1932 was registered in the city-states of Hamburg, Bremen, and Leubeck, and in the city of Berlin (30 or less per teacher), while the highest number of pupils per teacher may be found in Bavaria, Baden, Upper Silesia, Lower Silesia, East Prussia, Rhine Province, etc. Upper Silesia, with 47 pupils per teacher, records the highest number.

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